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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/506,596	09/03/2004	Nicholas Amato	529222000100	2845

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EXAMINER	
DUONG, OANH L	
ART UNIT	**PAPER NUMBER**
2155	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/18/2006	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/506,596	AMATO, NICHOLAS	
	Examiner	Art Unit	
	Oanh Duong	2155	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *03* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 September 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 September 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-9 are presented for examination.

Drawings

2. The informal drawings are not of sufficient quality to permit examination. Accordingly, replacement drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to this Office action. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action.

Applicant is given a TWO MONTH time period to submit new drawings in compliance with 37 CFR 1.81. Extensions of time may be obtained under the provisions of 37 CFR 1.136(a). Failure to timely submit replacement drawing sheets will result in ABANDONMENT of the application.

Specification Objection

3. The disclosure is objected to because of the following informalities: description of Figs. 7-16 is missing.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-3, and 5-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reynders et al. (Reynders), US 6,992,988, in view of Narvaez P. et al. (hereafter, Narvaez), "New Dynamic Algorithms for shortest Path Tree Computation", IEE/ACM Transactions on Networking, Vol. 8, No. 6, December 2000.

Regarding claim 1, Reynders teaches a method to determine one or more shortest paths through a portion of a computer network from a source vertex to one or more destination vertices according to a link-state protocol *(i.e., the shortest path from source node to other node determination, col. 5 lines 30-40),* comprising:

processing a graph representation of the network portion, the graph representation including nodes and edges representing the vertices and connections therebetween (i.e., subgraph, col. 2 lines 49-63), respectively wherein the processing includes operating on the graph representation according to a Dijkstra-like algorithm, a subset of the Dijkstra-like algorithm processing includes candidate list processing, to maintain and operate upon a candidate list of nodes that have been visited in the Dijkstra-like algorithm processing (i.e., Fibonacci Dijkstra algorithm, col. 5 line 10-col. 6

line 67); and the candidate list processing is optimized relative to standard Dijkstra algorithm processing for the link-state protocol (col. 6 lines 49-55).

Reynders does not explicitly teach the candidate list processing is optimized relative to standard Dijkstra algorithm processing for the link-state protocol.

Narvaez teaches the candidate list processing is optimized relative to standard Djkstra algorithm (i.e., Fibonacci Dijkstra) processing for the link-state protocol (page 742, col. 1 lines 15-29: Narvaez et al. discloses Fibonacci Dijsktra algorithm has lowest asymptotic complexity).

It would have been obvious to one of ordinary skill in the art at the time of the invention made to recognize that the Fibonacci Dijsktra algorithm applied in the system of Reynders is optimized relative to standard Dijkstra algorithm for the reason expressly taught by Narvaez.

Regarding claim 2, Reynders teaches the method of claim 1, wherein the candidate list processing includes: maintaining the candidate list of nodes as a Fibonacci heap of Fibonacci nodes, wherein the Fibonacci heap of Fibonacci nodes is stored in a generic format that is independent of the link-state protocol, and operating on the Fibonacci heap of Fibonacci nodes to determine one or more shortest paths by processing the Fibonacci heap of Fibonacci nodes according to a particular algorithm that is independent of the link-state protocol (col. 6 lines 49-55).

Regarding claim 3, Reynders- Narvaez teaches the method of claim 2, wherein the candidate list processing includes initially accepting a prior-created generic

description of the Fibonacci heap of Fibonacci nodes that is independent of the particular link-state protocol (Narvaez, page 734, section I.).

Regarding claim 5, Reynders teaches the method of claim 2, wherein the step of processing the Fibonacci heap of Fibonacci nodes includes considering the Fibonacci nodes to determine which nodes to include in the one or more shortest paths (col. 7 lines 10-35).

Regarding claim 6, Reynders teaches the method of claim 2, wherein the step of processing the Fibonacci heap of Fibonacci nodes includes a relax-key operation performed in an iterative manner (col. 6 lines 49-55).

Regarding claim 7, Reynders-Narvaez teaches the method of claim 2, including: initially allocating memory for a list of pointers to the Fibonacci nodes, wherein the step of operating on the Fibonacci nodes includes maintaining the list of pointers to the Fibonacci nodes (Narvaez, Link list, page 738 section V. (c)).

Regarding claim 8, Reynders-Narvaez teaches the method of claim 2, wherein the step of operating on the Fibonacci nodes includes accessing a comparison function associated with the Fibonacci heap in a manner that is independent of the particular link-state protocol (Narvaez, page 736 section IV.).

Regarding claim 9, the method of claim 1, wherein: the link-state protocol is a link-state routing protocol (Narvaez, col. 1, section, first paragraph).

6. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Reynders et al. (Reynders), US 6,992,988, in view of Narvaez P. et al. (hereafter, Narvaez), "New Dynamic Algorithms for shortest Path Tree Computation", IEE/ACM Transactions on Networking, Vol. 8, No. 6, December 2000, and further in view of Tang et al. (hereafter, Tang), US 2003/0185226 A1.

Regarding claim 4, Reynders-Narvaez teaches the method of claim 3, wherein initially accepting a prior-created generic description for the Fibonacci heap of Fibonacci nodes includes accepting the prior-created generic description (Narvaez, page 734, col. 1 second paragraph).

The combination of Reynders and Narvaez does not explicitly teach node accepts data via application programming interface (page2 paragraph [0015]).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate the application program interface as taught by Tang into the combination of teachings of Reynders and Narvaez. One would be motivated to do so to allow multiple forwarding elements to be managed by a single control element (col. 1 paragraph [0005] line6-8).

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Oanh Duong whose telephone number is (571) 272-3983. The examiner can normally be reached on Monday- Friday, 9:30PM - 6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Saleh Najjar can be reached on (571) 272-4006. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

O.D
December 11, 2006